



Attorney Docket No. IMMR-114/00US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Richard L. CUNNINGHAM

Serial No.: 10/803,080

Examiner: Unassigned

Filed: March 18, 2004

Art Unit: 2673

Confirmation No. 4170

For: **MEDICAL DEVICE AND PROCEDURE SIMULATION**

U.S. Patent and Trademark Office
220 20th Street South
Customer Window, Mail Stop Missing Parts
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- ☒ In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- ☐ In accordance with 37 C.F.R. §1.97(c), also enclosed is:
 - ☐ the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
 - ☐ a statement as specified in 37 C.F.R. §1.97(e).
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Dated: November 16, 2004

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Respectfully submitted,
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By:



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**INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56,
Applicant(s) hereby submits the following information in conformance with 37 C.F.R.
§§1.97 and 1.98.

- ☒ Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08A is provided on the enclosed CD.
- ☐ No copies of the publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial No. ____, filed ____, to which the above-identified application claims priority under 35 U.S.C. §120.
- ☐ No copies of any U.S. patents or U.S. patent application publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98 because this application was filed after June 30, 2003.
- ☐ Publication(s) __ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to __ application serial no. __ and mailed on __.
- ☐ Enclosed is a copy of a non-English publication(s) __. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).
- ☐ Enclosed is a copy of a non-English publication(s) __. English language publication __ (copy enclosed) claims priority from this non-English publication.

- ☐ Enclosed is an explanation of non-English publication(s) ___ for which an English translation is not available.
- ☐ Enclosed is an English translation of non-English publication(s) ___ cited in the attached Form PTO/SB/08A.
- ☐ Enclosed is a copy of pending patent Application Serial No. ___.

This Information Disclosure Statement is filed within any one of the following time periods:

- ☐ within three months from the filing date of this national application other than a CPA under 37 C.F.R. § 1.53(d);
- ☐ within three months from the date of entry of the national stage as set forth in 37 C.F.R. §1.491 in this international application;
- ☒ before the mailing date of a first office action on the merits; or
- ☐ before the mailing of a first office action after the filing of a request for continued examination under 37 C.F.R. § 1.114.

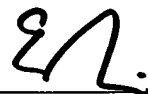
It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

Dated: November 16, 2004

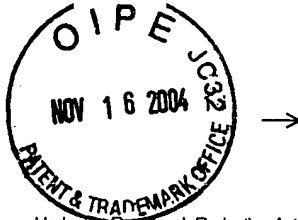
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COOLEY GODWARD LLP

By: _____



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PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet **1** of **7**

Complete if Known

Application Number	10/803,080
Filing Date	March 18, 2004
First Named Inventor	Richard L. Cunningham
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-114/00US

U.S. PATENT DOCUMENTS					
Examiner	Cite No. ¹	Document Number Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		6,422,941	7/23/2002	Thomer et al.	
		6,160,489	12/12/2000	Perry et al.	
		6,111,577	8/29/2000	Zilles et al.	
		5,785,630	7/28/1998	Bobick et al.	
		5,766,016	6/16/1998	Sinclair	
		5,690,582	11/25/1997	Ulrich et al.	
		5,575,761	11/19/1996	Hajianpour	
		5,547,382	8/20/1996	Yamasaki	
		5,466,213	11/14/1995	Hogan	
		5,437,607	8/1/1995	Taylor	
		5,436,622	7/25/1995	Gutman et al.	
		5,334,027	8/2/1994	Wherlock	
		5,309,140	5/3/1994	Everett	
		5,299,810	4/5/1994	Pierce	
		5,283,970	2/8/1994	Aigner	
		5,275,174	1/4/1994	Cook	
		5,271,290	12/21/1993	Fischer	
		5,240,417	8/31/1993	Smithson et al.	
		5,212,473	5/18/1993	Louis	
		5,186,695	2/16/1993	Mangseth et al.	
		5,175,459	12/29/1992	Danial et al.	
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		5,022,407	6/11/1991	Horch et al.	
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		4,934,694	6/19/1990	McIntosh	
		4,930,770	6/5/1990	Baker	
		4,891,764	1/2/1990	McIntosh	
		4,885,565	12/5/1989	Embach	
		4,794,392	12/27/1988	Selinko	
		4,713,007	12/15/1987	Alban	
		4,708,656	11/24/1987	De Vries et al.	

Examiner Signature		Date Considered	
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¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

² Applicant's unique citation designation number (optional). ³ Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ⁴ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁷ Applicant is to place a check mark here if English language Translation is attached.

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Filing Date	March 18, 2004
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Attorney Docket Number	IMMR-114/00US

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		Number Kind Code ² (if known)			
		4,599,070	7/8/1986	Hladky et al.	
		4,581,491	4/8/1986	Boothroyd	
		4,513,235	4/23/1985	Acklam et al.	
		4,484,191	11/20/1984	Vavra	
		4,464,117	8/7/1984	Foerst	
		4,333,070	6/1/1982	Barnes	
		4,262,549	4/21/1981	Schwellenbach	
		4,236,325	10/2/1980	Hall et al.	
		4,160,508	7/10/1979	Salsbury	
		4,127,752	11/28/1978	Lowthorp	
		3,911,416	10/7/1995	Feder	
		3,903,614	9/9/1975	Diamond et al	
		3,902,687	6/25/1973	Hightower	
		3,623,064	11/23/1970	Kagan	
		3,517,446	6/30/1970	Corlyon et al.	
		3,497,668	2/24/1970	Hirsch	
		3,220,121	11/30/1965	Cutler	
		3,157,853	11/17/1964	Hirsch	
		2,972,140	2/14/1961	Hirsch	

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
		EP	0349086		1/3/1990	Stork Kwant B.V.	
		JP	H2-185278		7/19/1990	Taito Corporation	
		JP	H4-8381		1/13/1992	Epoch Co. and Key- Planning Co.	
		JP	H7-24147		1/27/1995	Sega Corporation	
		JP	H5-192449		8/3/1993	Taito Corporation	

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Sheet **3** of **7****Complete if Known**

Application Number	10/803,080
Filing Date	March 18, 2004
First Named Inventor	Richard L. Cunningham
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-114/00US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990.
		IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.
		RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives, pp. 1-131, May 1990, archived 08/14/1990.
		BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.
		JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990.
		BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.
		SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4, with 45 pages of attachments, 06/15/1989.
		OUH-YOUNG, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, pp. 1-369, 1990.
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		STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 55-61, ASME 1992.
		RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992.
		KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," <i>Telemanipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.

Examiner
SignatureDate
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Sheet **4** of **7****Complete if Known**

Application Number	10/803,080
Filing Date	March 18, 2004
First Named Inventor	Richard L. Cunningham
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-114/00US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

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		PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.
		ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90.
		BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," <i>Science</i> , Vol. 208, No. 4450, pp. 1327-1335, 1980.
		BEJCZY et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISM-IFTOMM</i> , Sep. 8-12, 1981.
		MCAFFEE, "Teleoperator Subsystem/Telerobot Demonsdtrator: Force Reflecting Hand Controller Equipment Manual," <i>JPL D-5172</i> , January 1988.
		MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95.
		JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," <i>Intervention/ROV '91 Conference & Exposition</i> , Hollywood, Florida, May 21-23, 1991.
		SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.
		IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.
		TERRY et al., "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fouteenth Annual Northeast Bioengineering Conference</i> , University of New Hampshire, March 10-11, 1988.
		HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992.
		EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993.
		RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987.
		BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980.

Examiner Signature		Date Considered	
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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

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Sheet **5** of **7****Complete if Known**

Application Number	10/803,080
Filing Date	March 18, 2004
First Named Inventor	Richard L. Cunningham
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-114/00US

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop</i> , JSC, Houston, TX, July 25-27, 1989.
		OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics</i> , Vol. 41, No. 3, August 1995.
		MARCUS, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sept. 8-11, 1994.
		BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
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		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," <i>DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1</i> , ASME 1994.
		GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.
		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.

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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		OUIYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.
		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
		LAKE, "Cyberman from Logitech," at http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html , 1994.
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		SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994
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		NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue.
		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," <i>Ph.D. Dissertation</i> , Stanford University, June 1994.
		Sawbones Worldwide website page, http://www.sawbones.com , dated 10/17/2003
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		"SEXTANT™ Percutaneous Rod Insertion – Overview", Article 1573, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article_1573.html , dated January 21, 2004
		"SEXTANT™ Percutaneous Rod Insertion – Overview", Article 1574, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article1574.html , dated January 21, 2004
		"SEXTANT™ Percutaneous Rod Insertion – Pedicle Screws", Article 1575, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article1575.html , dated January 21, 2004
		"CD HORIZON® SEXTANT™ Rod Insertion Set", Medtronic Sofamor Danek, website: http://www.medtronisofamordanek.com/patient-minimal-sextant.html , dated January 21, 2004

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Sheet **7** of **7****Complete if Known**

Application Number	10/803,080
Filing Date	March 18, 2004
First Named Inventor	Richard L. Cunningham
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-114/00US

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		"SEXTANT™ Percutaneous Rod Insertion – Features", Article 1576, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article1576.html , dated January 21, 2004	
		"SEXTANT™ Percutaneous Rod Insertion – Surgical Techniques", Article 1577, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article1577.html , dated January 21, 2004	
		"SEXTANT™ Percutaneous Rod Insertion – Clinical Experience", Article 1578, Spineuniverse.com, website: http://www.spineuniverse.com/displayarticle.php/article1578.html , dated January 21, 2004	
		EnduraTEC, New Full Spine Simulator Provides Unique Benefits for Spinal Device Engineering, "The Challenge: To Provide a Versatile Tool for Realistic Simulation of Spinal Kinematics"	

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